



Conception process and organizational coordination in design-based industries: new structures and strategy

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Copyright and database protection, patents and research tools, and other challenge to the intellectual property system

Design coordination with organizational departments of the firm in conception process

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Introduction : Design based industry

Usually creative industries are defined as industries of entertainment and art, specifically dedicated to producing disks, movies, books, cultural services and so on. Nowadays, this is a very narrow view of the place of culture and creativity in the economy. It is easily observed that traditional industrial sectors are using, more and more frequently, cultural and artistic inputs in their production. In particular, most industries rely on design for the conception of their new products. Such phenomenon highlights specific questions for IPR risen by the emergent importance of the design.

Industrial design is a strategic device for improving the quality of a great many products and a way of fascinating consumers through its symbolic content. Moreover should be also acknowledged the actual role of design in lowering production costs in many industries. This is the reason why design is not only a trait of luxury goods: it applies as well to a large number of final and intermediate goods.

Design has changed a lot in the past decade. From a tool limited to the most dynamic firms, it has become a condition of survival in saturated markets. Design used to be localized (usually in R&D departments) it is now spreading throughout the firm. Previously, design affected industries associated with specific techniques, market and artistic traditions. Today, design is more widespread: it does not only affect all sectors, but it is also spreading throughout the industrial chain and is not only limited to the upstream.

Enlarging traditional means for consuming creation-based productions, IPR values grow. Yet, duplication and distribution possibilities end to uncontrolled and massive copies using the gaps of property right or by piracy. Legal problems risen by new technologies concern therefore the structuring and "value" of design, on one side, the means for their protection and their control of the other side.

Design : demand and supply

Design is pushed by demand and pulled by supply

Complexity of design production results both from supply and demand side : on the one hand, from the bursting of the creative productions, on the other hand, from the diversity of marketing and conception contexts.

Producers strategies strengthen technical possibilities. For they try to minimize their risks privileging repetition of success or steady patterns.

Owing to a combination of several factors, demand has won over supply in many industries.

Clothing industry, as an example, faced at the same time, a downturn in expenditure in western countries, higher imports and overseas manufacturing increasing the levels of competition. Consumers' selection criteria are the price and availability of the product, and how "fashionable" it is. The result is an acceleration in the number of products developed each year ; consequently, design deadlines become shorter.

The best place in the value chain to identify those needs and tastes is to be in direct contact with customers. In "buyer-driven commodity chains", large retailers, brand-named merchandisers, and trading companies play the pivotal role in setting up decentralized production networks in a variety of exporting countries. This pattern has become common in labour-intensive, consumer-goods industries such as garments, footwear, toys, consumer electronics, and house wares : production is carried out by independent factories that make finished goods under original equipment manufacturer (OEM) arrangements. The specifications are supplied by the buyers and branded companies that design the goods.

Design : hard to define

The question of property right is a powerful symptom of transformations technical mutations entail: evolution of products, production processes, distribution and consumption means, new actors, competitive structure of the market, concentration and diversification, regulation and control...

Innovation and conception become more and more collaborative and less and less mosaic (simply combining competencies). It was already the case in cultural industry. But this phenomenon has been strengthened and widened to others sectors.

Property rights in new medias suit therefore less and less the mere protection of designers and producers. In a collective creation, each contribution becomes anonymous and capacity for innovation holds more in the organization than in the creative spirit of individuals.

A ubiquitous place, a difficult job to be defined

Importance given to creative developments suggests new agents and difficulty to set where creation and design take place. They are emerging locally, in the production process, or more globally, in the sector organization. In production and conception teams, new technical possibilities and manipulations require competencies to use new machines. They imply, thereby, a new labor division and the irruption of new actors in the creation process. According to the cases, design contribution can be conceived as a technical benefit (paid as a salary) or as a creative contribution (remunerated by property right). Therefore no labor organization is unanimously accepted and shared, as one can see in other industries. In such a context, each production can represent a particular arrangement and gives place for negotiation to determine precisely the nature and the origin of the creative contribution.

Combination of competencies

Several knowledge and competences required

In the value chain, the term "new product design" encompasses all activities from the preliminary design sketch to the selection of materials and fabrics. Production development of the product begins once a product pattern has been created. A new product may then be the result of either a new design or changes to an existing pattern. The following step is manufacturing, which can be broken down into several operations ranging from design to manufacturing.

As the main issue is meeting customer expectations within very short deadlines, it appears that the control of distribution, and particularly of sales feedback, is essential. More and more, design decisions are made on the basis of this information. Retailers are the industry agents having the greatest knowledge of the products success. Existing tools simplify the creative process. Rather than having to re-create a model from scratch (a new design sketch), firms may use libraries of models and patterns, which are modified from season to season.

Different structuring and organization of DBI

Different structuring and organizational configurations ...but of common trends

A substantial consensus exists on the systemic features of the generation and distribution of technological knowledge and introduction of technological change. Variety among innovation systems reflects and stems from the variety of modes of coordination of the elements of the systems. The characterization of structure and dynamics creation systems and their modes of coordination then turn to become a central issue.

The variety of creative agents in terms of design opportunities and creation mechanisms is a key factor, from organization, financing and protection points of view: effective creation systems include manufacturing firms, service firms, retails, subcontractors, large firm, SME, individuals... in a myriad of specific actors specialized in competing and / or complementary roles. In sum, design is more and more viewed as the result of the repeated and dynamic interaction of agents which are embedded in a variety of specific and highly idiosyncratic systems. In other words design structures becomes specific, depending on the local conditions into which this creation process is embedded.

External differentiated configurations

Appropriation modes have been defined through structural specificities according industrial sectors and historical structuring

The model of the designer - creator

The model of the anonymous creator

The model of brandmark distributor as a contractor

The model of brandmark distributor as a publicizer

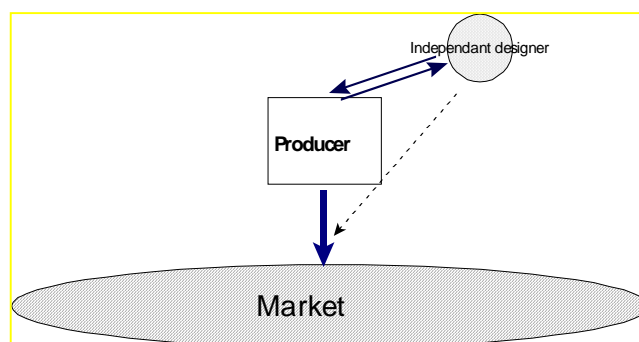
The manufacturing industrial model

The model of designer- producer

The model of the designer-creator

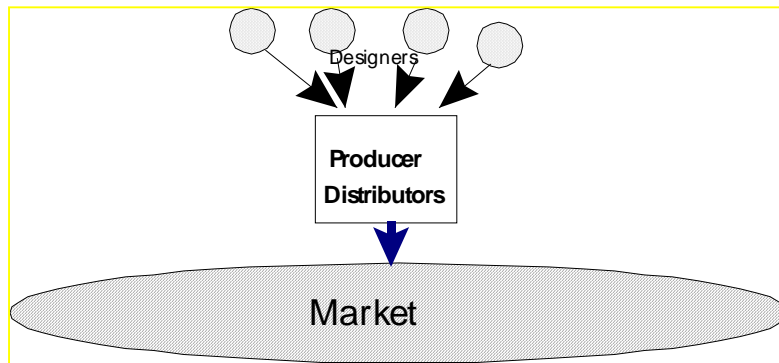
Products are signés" (by a designer or a group of designers)

On producer initiative



The model of the anonymous creator

Products branded by producer or distributor (textile, grocery...)
On producer initiative
designers can be substituted or "hidden"

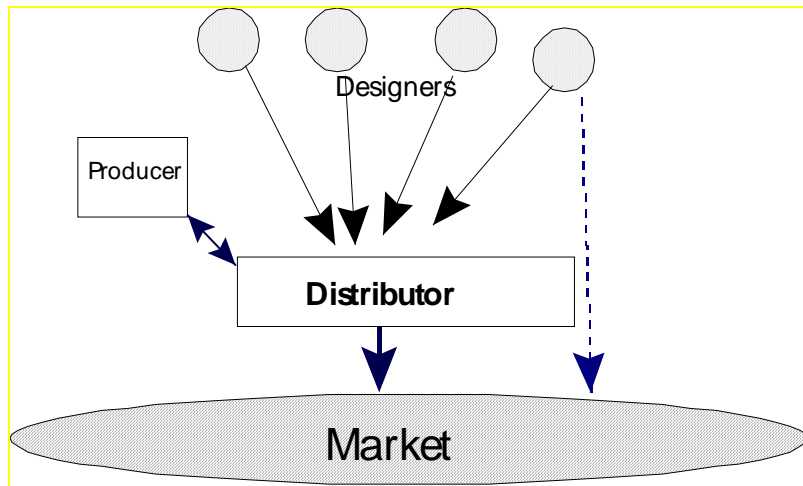


The model of brandmark distributor as a contractor

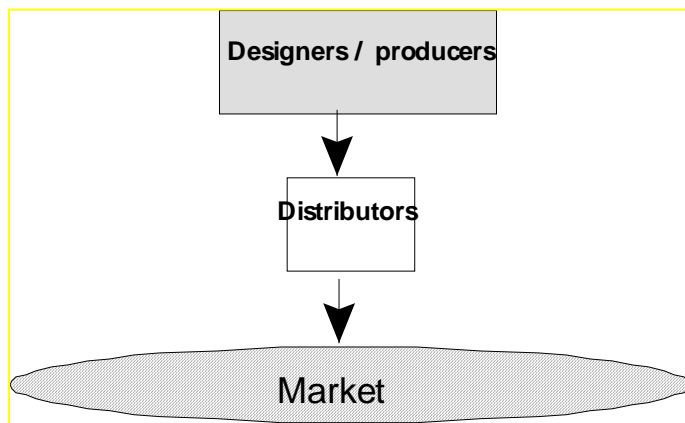
Distributor brandmark Ikea, 3 Suisses...)
On distributor initiative
Subcontracting to producers
Designers can be external and substituted, or in-house

The first restriction in protection of owners is economic. It sticks to undue exploitation. This problem always existed, but its importance is renewed thanks to new facilities in distribution and to difficulties in control. New technologies convert rarity of goods, and the corresponding conception of property rights. Their growing weight matches with dematerialization of products¹. Situation shifts from design and publishing right, to exploitation and distribution right, it compels to mere "disposal right" with no materialization of the consumption, no possibility to control consumers' access.

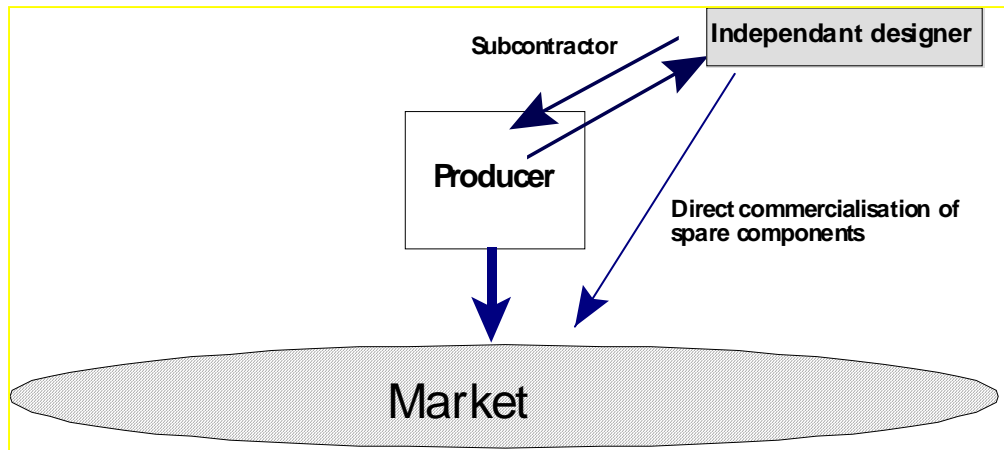
¹ it will still increase with development of telecommunication networks and "informations' highways" whether their form will be.



The model of brandmark distributor as a publicizer
 Distributor brandmark products (Habitat...)
 On designer or hidden producer initiative
 Designers can be suppliers with production capacities

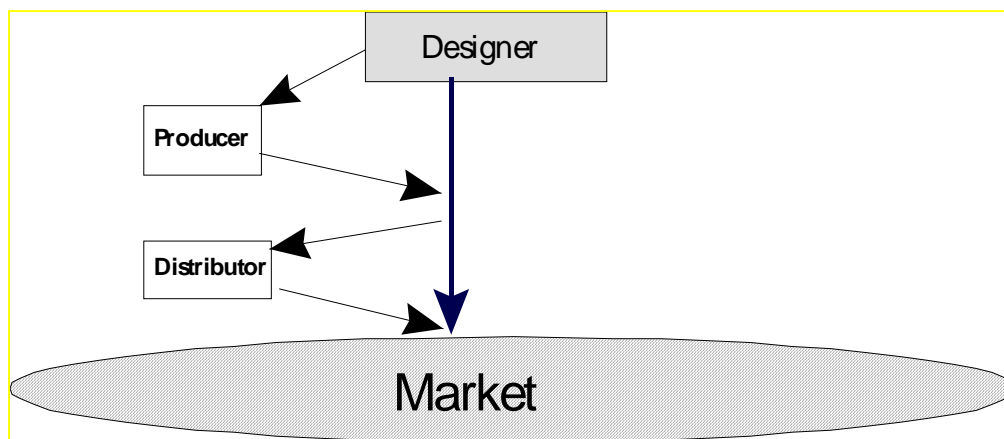


The manufacturing industrial model
 Product branded by the producer and the designer
 Designer eventually getting production capacity
 On producer initiative
 Designer subcontractor or getting access to the market on his own name
 From product and competence supply toward provision of services



The model of designer-producer

- Products are "signés"
- On designer initiative and production
- Designer get production resources
- Distribution (and production) subcontracted



Main points to be highlighted :

- star system economy vs. substitutive
- Commitments, payments and IPR : salary, flat fee, royalties...
- "final cut"
- individual vs. design agency
- integration level with the manufacturer

Different Integrated configurations

The model of the manufacturer

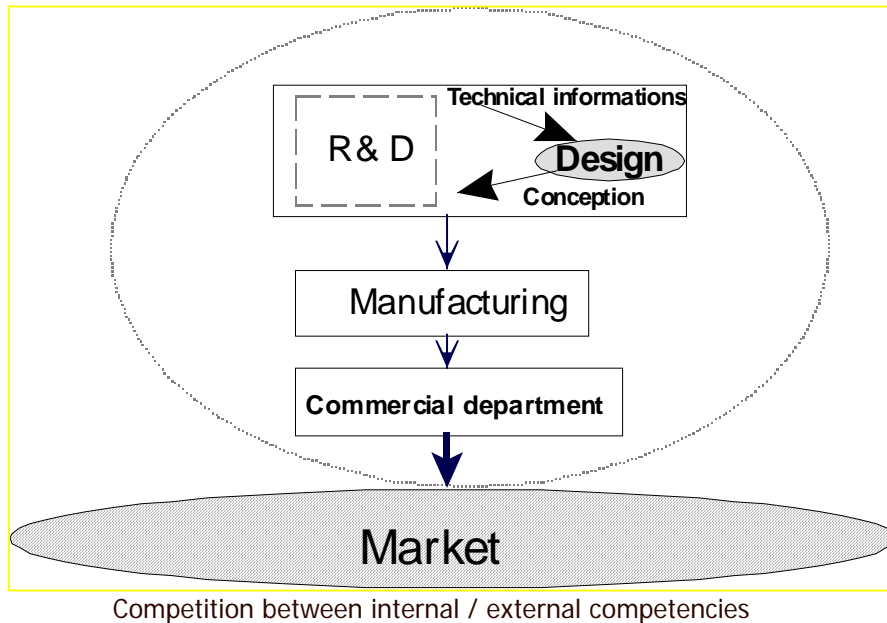
The market-oriented - model

The distribution - oriented model

The "design as a resources center" model

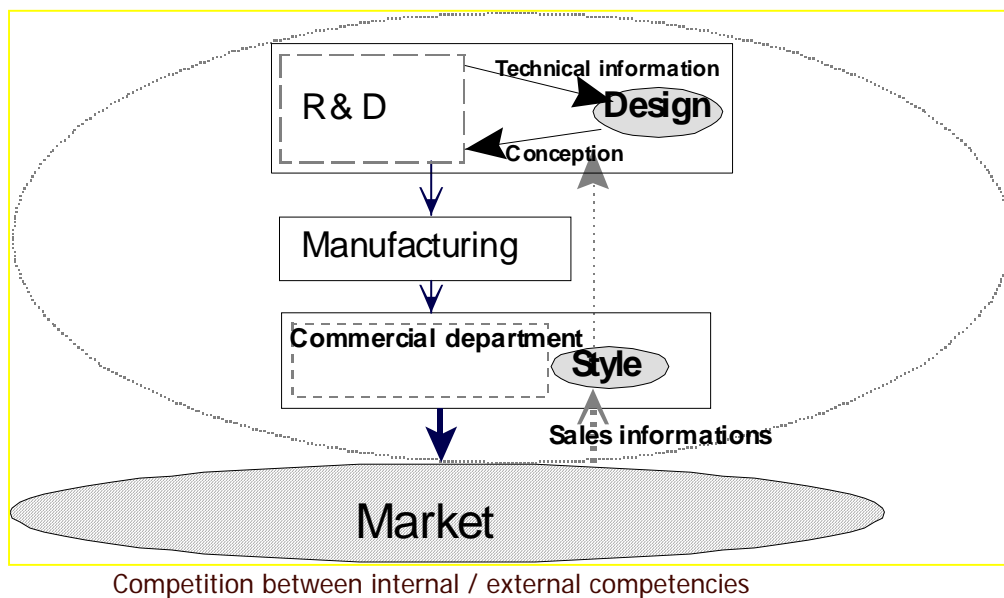
The model of the manufacturer

Style department / identifiable design
Integrated to the R & D department



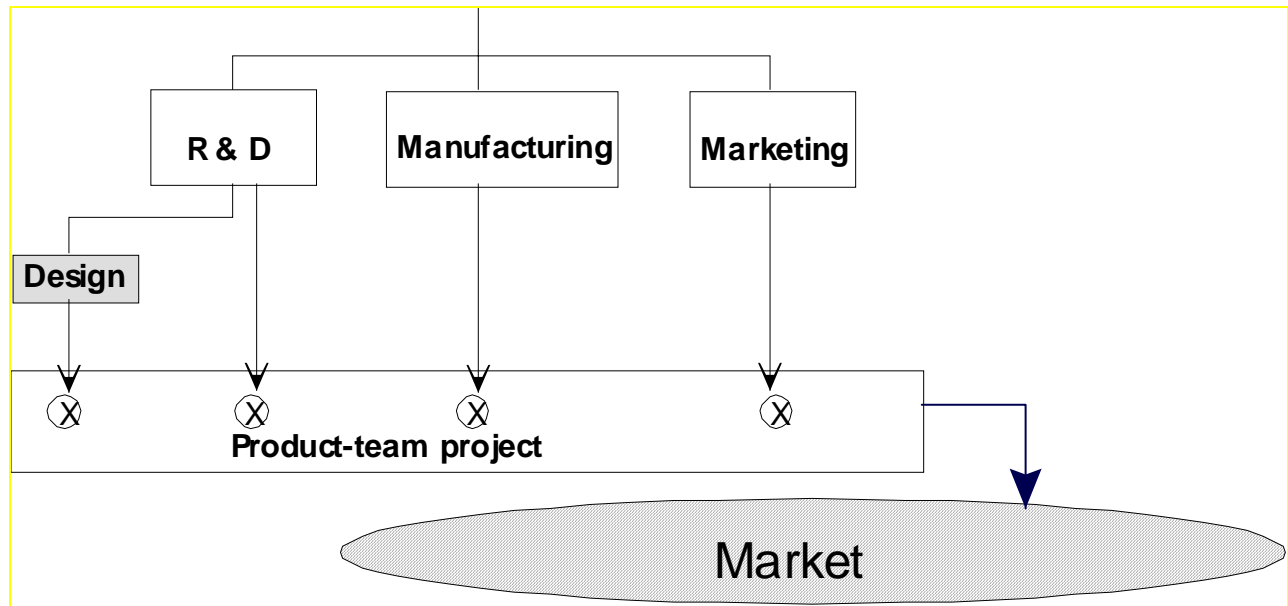
The market-oriented - model

design department / identifiable style
Integrated to the marketing department



The "design as resources center" model

Design = resources and competence center
Integration in project team
Simultaneous use of internal (to keep a good knowledge of the structure) and external (to get news ideas) resources



Main points to be highlighted :

- technical or commercial oriented
- internal / external competition
- integration level within projects

Several aspects to be protected

Aspects to be protected

As a consequence, counterfeiting is affecting a wide range of products and industries components and it is several specific forms of piracy exist corresponding to different strategies of the economic agents : it can be the symbolic and immaterial value (trademark and mark services), the technical and functional quality of the produced good (design, innovation), or the production and distribution capacity (R&D knowledge). More precisely, different components of intellectual property can be counterfeited.

1. The mark. Here the pirate captures reputation and mark services, copying the trademark. The more licenses are traded by the original owner, the greater is the probability that the mark be copied. In some cases, such a practice can be applied to goods not actually produced by the original manufacturer. This happens, for instance, when the pirate puts counterfeited logos or trademarks (Lacoste crocodile e.g.) on products or goods which are not actually produced by the original manufacturer (a pirate may produce Lacoste ties or handkerchief which do not exist).

2. The design. Piracy consists in copying and using the idea, the technical conception and the original form of a product : it can be slavish copy, free adaptation or simple use of some elements or components of the original. In general, such products counterfeit simultaneously the mark and the design. Yet, in some cases, illegal copies of the Prada and Vuitton bags are inspired by the original form and material but are not always strictly counterfeiting the trademark. Such cases are frequent in industrial goods, when only the design is counterfeited. Moreover, pirates may improve fonctions and performances of pirated goods through innovations; it has been noticed that sometimes consumers ask Vuitton for introducing innovations found in pirated sacks.

3. Production infrastructure - In some situations, counterfactors are actual subcontractors of the original producers, using illegally original production equipment, models and infrastructure. In such a case, pirated goods may share the very same quality of the original ones. This is the case when

subcontractors overproduce in order to sell part of the production on their own. Sport or textile equipment contractors are frequently facing such situations

4. Standards and interoperability - In other cases, (spare parts in car or aircraft industry, ink cartridges for printers), the core of the copying process do not rely on a form or a particular design but mainly on the interoperability capacity of the product . In this situation, pirates avoid patents, illegally using proprietary standards developed by the original producer in order to protect their markets and their innovations. Such standards are very important when producer uses them to bundle goods together, transferring revenues from one product to another one, overpricing some components once the customer is locked in: this is the strategy for spare parts in general. The razor manufacturers give, for instance, razors for free and selling their blades at a higher price.

5. Product. In certain situations, consumers and users themselves can develop unfair use or create themselves illegal counterfeiting (with potentially strong effects in case of mass production). This can happen when the producers have artificially segmented different submarkets discriminating quality and price according to different consumer's willingness to pay (business or professional use vs. private use for instance). As an example: software copies, abusive licences.

6. Distribution network. Finally, piracy can be originated in the distribution and retailers network. Sellers and retailers could use original trademarks and original products to tease and attract consumers, and to sell, then, more lucrative substitutes bypassing exclusivity contracts or trading illegal copies.

Several means to protect IP

Several means to protect property rights for design

Relying on high symbolic value and intellectual property, design-based industry is structurally confronted to forgery. Given the spectacular growth of the design-based products, commercial piracy has today a large base. French statistics indicate that counterfeiting is taking place in every sectors : the average percentage of firms facing forgery is 19%, it raises to 65% in luxury goods and enforcement is difficult. DBI develops legal systems and private practices to enforce excludability. Nevertheless, to emphasize one of the many ambiguities of the illegal markets, it should be noted that unfair competition, in the form of illegal copy of a protected design, could be appreciated by the original producer as far as these practices are an indirect way to foster his/her reputation.

Facing such multi-sided piracy and dispersion of markets, Competences and production engaged in design may use specific protection sets of laws : protection of drawings and models, patent, brandnames and marks, author right – copyright.

Yet, recent evolutions are the result of "iron arm" (between producers, designers, distributors, and consumers notably) rather than decision of justice. In vary cases, marginal incomes of some activities are sometimes largely inferior to information and control costs over new markets. One slips thus from a reply in judicial terms (refinement of property right, institution of control devices) to a reply in economic terms (regulation of the competition, licenses or fiscal taxes, decrease of prices, modification of sales practices, collective management for property rights). New coordinations are established between economic agents. The development of license agreements, for instance, creates a balance between producers and distributors by off-market, rules by oligopolistic agreements, by establishment of entry barriers to new competitors.

Public / private strategies

Which strategy ?

Public

The first set of protection are legal based, consisting in the creation, adaptation and implementation of copyright, patent rights, trade mark protection and competition regulation. However, international treaties have their own limits. Firstly, the best enforcement strategies and policies are difficult to define as economic and cultural national models may be consistent with different solutions.

Then, enforcement policies can provide perverse effects, worst than the starting situation. As we pointed out before brutal enforcement of the law to foster commodification and free-trade could result in an unwitting outcome, such as the strengthening of the criminal organisation or the elimination of the illegal *local* industry. Thirdly, IPR is hardly finalized nor enacted when illegal firms and consumers can get strong advantages through piracy (lower prices, low entry barriers, availability of commodities). As a consequence, some countries protect design for manufactured goods with copyright law, others deny this protection...

Private

The second set of rules are mostly private one and structured by economic and managerial rationale. They rely on the creation and operating of control devices or on the implementation of specific production attitudes. More precisely, we can distinguish the following strategies.

1. *Tracability* - Products are individually identified (by a specific number), production and distribution is precisely controlled, users have to declare themselves and can be registrated in a file. We can find such strategy in software industry but also in wine business.
2. *Technical lock-in* - To prevent reverse engineering and unauthorized copy, illegal or unfair use, producers can try to develop technical devices such as cryptography, artificial technical limitation, non standard interfaces, complexity and global conception. Such situation can be found, for example, in videogames : the cassettes presentation of software make them very difficult to imitate, notwithstanding any patent concern.
3. *Innovation and frequent product renewal* - An other way to prevent copy is to stimulate frequent renewal of goods and to develop high innovation rates, adding regularly technical improvements in product design or fabrication process. Using such strategy, producers remain ahead pirates : imitators can only follow the market and have great difficulty to edit faked products in due time. As an example of such strategy, we could mention electronic and Hifi, or sport shoes.
4. *Rising quality level and production complexity* - An other mean to protect manufacturers is to make products, components, material and fabrication process more difficult and sophisticated. In such situation, counterfacting process becomes very difficult, requiring higher knowledge and equipments and involving high costs. Yet, as we saw earlier, such strategy does not prevent illegal competition by lower quality products.
5. *Industrial secret* . There are at least two main advantages in using industrial secrets. The first one is that information about innovation has not to be revealed. The second one is that while patents have an official deadline, secrecy is for ever (let us think of Coca Cola). Such strategy could be very efficient when reverse engineering is not possible. Of course spionage and the cost of keeping the secret unrevealed can be very high.
6. *Exclusive distribution* - It give original producers two main advantages. Firstly, they can know and control their retailers' network very well. Doing so, they make pirated products very difficult to be sold as they need an alternative distribution network. Secondly, exclusive distribution constitute a public information and give the consumer an immediate mean to know wether or not the products are legal : goods distributed outside the exclusive network are either illegal or stolen (cf. perfume or luxury).
7. *Structuring consortium or cartel* - The main objective is to share (at the business, the national or the industry level) control means and tools in order to constitute a major economic actor and to raise a credible menace for pirates and fraudulent economic actors (being them other firms or consumers). We can find such cartels in software industry (Business Software Alliance), in luxury goods (Comité Colbert), in cultural and audiovisual sector (IIPA, MPA...), but in more traditional industries as well (inks and printers spare parts).

Legal / Illegal enforcement

Which enforcement ?

Market regulation in the design-based industry is first of all devoted to a classic dilemma: whether or not to protect a monopolistic privilege arising from the acknowledgement of an enforceable property right over a design or an ornament. As far as the design-based industry is concerned a further dilemma could be approached. The design-based industry is divided into one legal market and two

"counter-markets": the illegal market and the market occupied by criminal organization. The illegal market is an attempt to evade the formal constraints of the law (copyright, labor regulation, and fiscal charges), but in its essential nature it is oriented to the market rules of pure competition. The criminal organization, on the contrary, is a command economy, oriented to the coercive exploitation of subordinate agents and to the shunting of legal and social norms generating costs. These organizations are typical in drugs and cigarettes, but their activity in design-based industry are not at all marginal because they can exploit the same distribution and retail networks bypassing customs and police controls. In such cases, delivery channels, market places, street pedlars are frequently the same and are all strictly controlled by coercion.

All three segments of the aggregate design-based market are communicating. This means that, given the aggregate demand, it is possible, at some amount of transaction costs, to transfer activity from one another. Consumers as well can shift from one market to another. If so, analysing impact and efficiency of policy regulation, one should question what happens when the State enforces law against illegal producers.

First of all, according to the rationale of the *crime economics* approach the value of the sanctions should have a deterrence effect over individual criminal behavior. In this sense it could be stated that if criminal activities are much more heavily sanctioned than illegal activities, enforcement must have success in reducing criminal behavior. However in our context of struggle with criminal organisations it seems to be relevant to distinguish between pecuniary and non pecuniary sanctions. As a matter of fact, if pecuniary sanctions may be a strong deterrent against the strategies of the illegal firms, that - as we suggested are *within the business* - the same sanctions can be ineffective against criminal organisations, that do not reveal any capital asset, nor income to be struck at by the pecuniary sanction. Then, we have to turn to non pecuniary sanctions. Illegal firms are without any doubt influenced by pecuniary sanctions, on the contrary their application to criminal organisations may arise a limitation. To fight with criminal organisation does not allow fine tuning, thus reducing the scope for an enforcement policy.

Secondly, when it is forced to respect copyright law and fiscal norms, the illegal firm losses profits and faces increasing costs. One probable consequence is that the illegal firm is thrown out of the market. In that case, both the legal monopolistic firm or the criminal organisation can replace the illegal firm in the design-based market. Our argument is that in the competition to get the market share made available from the vanishing of the illegal firm, criminal organization can prevail over the legal firm. Empirical evidences of such evolution are given by industrialization rates in regions controlled by criminal organisation. Researches made in southern Italy show that in the regions where the *mafia's* social capital is powerful, the industrial setting and the birth rate of firms are lower than in the other regions : such evidences give indirect arguments confirming that when criminal organisations are existing, legal firms can hardly take their place on the market (Beccattini, 1998; Sciarrone,1998)

As a consequence, from the society point of view, reinforcing enforcement could be worst if the fight against illegal firms gives raise to the strengthening of a criminal organization. The economic and social dilemma of the enforcement is socially unacceptable because the alternatives are in any case worst than the current situation. In the one hand, a firm (the illegal one) is eliminated which is a real value, a set of entrepreneurial experiences, and of skilled labor force. In the second hand, new opportunities are offered to criminal organisations, the mafia or the yakuza's structures, completely running outside the law.